Incorporation of bioactive materials in nanofibers during electrospinning

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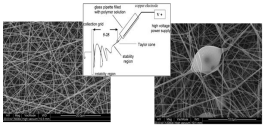
Novel multifunctional textile fibers and materials with unique values and functionalities can be produced by incorporating bioactive materials through new technologies like electrospinning. These high-tech materials offer value added services to their user because they have special qualities which lacks in classical materials. Depending on the functionality added, the novel materials can find applications in different fields like medical applications, personal protective equipment (P.P.E), apparel etc. The novel properties can be inspired by nature (bio active materials) or chemicals (synthetic materials. Additives can be embedded on the textile materials using different methods and in different production process. In most cases, incorporation of additives on textile materials has always been done at the finishing process. This means the additives are impregnated on the surface of the material. Physical and chemical reactions bind the additives on the material. Novel technologies like electrospinning and melt extrusion can be used to embed the bioactive materials in textile fibers and materials. This guarantees a permanent bond between the fibers and the additive since the additives will be strongly attached in the polymer matrix of the fibers.



SEM image of blank nanofibers

SEM image of nanofibers embedded with micro-organism spores

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